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10/792,318	03/02/2004	In Hwan Choi	2080-3023C1	4402
35884 7590 05/09/2008 LEE, HONG, DEGERMAN, KANG & SCHMADEKA 660 S. FIGUEROA STREET Suite 2300 LOS ANGELES, CA 90017				
EXAMINER AN, SHAWN S				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/792,318

Applicant(s)

CHOI ET AL.

Examiner

SHAWN AN

Art Unit

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 41-104 is/are pending in the application.
- 4a) Of the above claim(s) 41-68 and 99-104 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 69-98 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-85/86)
Paper No(s)/Mail Date 11/8, 2/7, 3/2 6/27, 6/30
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. As per Applicant's instructions as filed on 3/05/08 and 4/24/08, claims 44, 69-81, and 96 have been amended, claims 1-40 have been canceled, and claims 99-104 have been newly added.

Response to Restriction/Election

2. Applicant's election without traverse of the Group II corresponding to claims 69-98, in the reply filed on 3/05/08, has been acknowledged. Therefore, non-elected claims 41-68 are now considered withdrawn claims.

Applicant have added claims 99-104, However, upon further review, the Examiner disagrees with the Applicant's notion that claim 99 is drawn to the same group (Group II) of the claimed invention for the following reasons.

Newly added claim 99 contains a subject matter (predefined sequences being used to enhance ghost cancellation performance of both the supplemental data and the main data in a channel equalizer of the DTV receiver), which is not presented in the elected group of claims 69-98.

Furthermore, newly added claim 100 contains a subject matter that is similar to the above feature, and another subject matter that is similar to the non-elected claim 41 features (from Group I), which are not presented in the elected group I of claims 69-98.

Moreover, examination of the additional claims 99-104 create undue burden on the Office due to additional/extra prior art searching and prosecution.

Therefore, since the Applicant has elected the Group II pertaining to claims 69-98, and the claim 100 is similar to the non-elected claim 41, and the claim 99 comprises the subject matter, which are conceptually out of boundary with respect to elected claims 69-98, the claims 99-100 and dependent claims 101-104 (by virtue of dependency) are now treated as being withdrawn claims.

The requirement is now deemed proper and is therefore made FINAL.

Claim Objections

3. Claim 91 is objected to because of the following informalities:
In claim 91, lines 1-2, the recited "A bytes" should be changed to "C bytes".
Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 69-71, 73-75, 79-80, 82-86, 88, 90-93, and 95-98 are rejected under 35 U.S.C. 102(e) as being anticipated by Knutson et al (6,788,710 B1).

Regarding claims 69 and 71, Knutson et al discloses a DTV receiver that processes VSB data comprising:

a plurality of main data segments, wherein each main data segments comprising N data bytes (Figs. 5-6, PAYLOAD); and

a plurality of expanded supplemental data segments based on a plurality of null bits, each expanded supplemental data segment comprising M expanded supplemental data bytes, wherein the plurality of null bits are inserted at predetermined alternating positions (null bits are only filled after supplemental data in a packet, thereby alternating) within each expanded supplemental data segments (Fig. 8, 82, 86; col. 6, lines 35-45).

Regarding claim 70, Knutson et al discloses MPEG data segment (abs.).

Regarding claim 73, Knutson et al discloses Reed Solomon parity bytes (col. 3, lines 25-28).

Regarding claims 74-75, Knutson et al discloses MPEG header (MPEG-2 standard comprises 3 header bytes plus 1 sync byte) being added to each main data segment (col. 4, lines 13-15; note: MPEG-2 standard packetized datastream comprises PES header) and each expanded supplemental data segment (Fig. 3A, PES Header; col. 2, lines 16-19; col. 4, lines 34-45).

Regarding claims 82-84, Knutson et al discloses a method of formatting VSB data comprising:

- receiving M sets of A bytes of supplemental data (Fig. 8, 80);

- inserting A bytes of null data being arranged at alternating positions (null bits are only filled after supplemental data in a packet, thereby alternating) within each received set of A bytes of supplemental data to produce M*X (X=2) sets of A bytes of expanded supplemental data segment (84, 86); and

- multiplexing M*X sets of A bytes of expanded supplemental data segment with N sets of main data segments (88; col. 6, lines 35-45).

Regarding claims 79, 85, and 92, Knutson et al discloses M*X sets of expanded supplemental data segment and N sets of main data segment being multiplexed at a predetermined multiplex ratio (Fig. 3, 8 and/or 16 VSB format(s)).

Regarding claims 80, 86, and 93, Knutson et al discloses M*X sets of expanded supplemental data segment and N sets of main data segment being multiplexed at a multiplexing ratio of one to one (Fig. 3, 16 VSB format).

Regarding claims 88, 90-91, and 95, Knutson et al discloses a method of formatting VSB data comprising:

- receiving M sets of A bytes of supplemental data (Fig. 8, 80; Fig. 1, TStream);

- Reed Solomon coding each set of A bytes of supplemental data by adding B bytes of Reed Solomon parity to produce M sets of C bytes of Reed Solomon coded data (Fig. 1, 10; col. 3, lines 38-46);

- interleaving each Reed Solomon coded set of C bytes supplemental data (11);

- inserting C bytes of null data being arranged at alternating positions (null bits are only filled after supplemental data in a packet, thereby alternating) within each

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interleaved set of C bytes of supplemental data to produce $M \times X$ ($X=2$) sets of C bytes of expanded supplemental data (Fig. 8, 84, 86);

inserting D ($D=3$) bytes of header to produce $M \times X$ sets of expanded supplemental data segment (Fig. 3A, Header); and

multiplexing $M \times X$ sets of expanded supplemental data segment with N sets of main data segment (88; col. 6, lines 35-45).

Regarding claim 96, Knutson et al discloses a DTV receiver that processes VSB data comprising:

a plurality of main data segments, wherein each main data segments comprising N data bytes (Figs. 5-6, PAYLOAD); and

a plurality of expanded supplemental data segments, each supplemental data segment being derived from M bytes of supplemental data (Fig. 8, 80) and a plurality of null bits (82) inserted in the supplemental data bytes (Fig. 8, 84, 86; col. 6, lines 35-45).

Regarding claim 97, Knutson et al discloses a method of formatting VSB data comprising:

receiving M sets of A bytes of supplemental data (Fig. 8, 80);

inserting $B \times A$ bytes of null bits into each received set of A bytes of supplemental data to produce M expanded supplemental data sets each comprising $(B \times A) + A$ bytes (84, 86); and

multiplexing the M sets of expanded supplemental data with N sets of main data (88; col. 6, lines 35-45).

Regarding claim 98, Knutson et al discloses a method of formatting VSB data comprising:

receiving M sets of A bytes of supplemental data (Fig. 8, 80; Fig. 1, TStream);

Reed Solomon coding each set of A bytes of supplemental data by adding B bytes of Reed Solomon parity to produce M sets of C bytes of Reed Solomon coded data (Fig. 1, 10; col. 3, lines 38-46);

interleaving each Reed Solomon coded set of C bytes supplemental data (11);

inserting C+E bytes of null data into each interleaved set of C bytes of supplemental data to produce M*(C+E) sets of bytes of expanded supplemental data (Fig. 8, 84, 86);

inserting D bytes of header in each set of supplemental data to produce M*(C+E) sets of expanded supplemental data segments (Fig. 3A, Header); and

multiplexing M*(C+E) sets of expanded supplemental data segment with N sets of main data segment (88; col. 6, lines 35-45).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 81, 87, and 94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knutson et al (6,788,710 B1)

Regarding claims 81, 87, and 94, Knutson et al discloses M*X sets of expanded supplemental data segment and N sets of main data segment being multiplexed at a multiplexing ratio of one to one (Fig. 3, 16 VSB format) and one to two (8 VSB format).

Therefore, it would have been considered an obvious design choice/preference to make the multiplexing ratio one two three just as long as timing in the transmission channel is maintained (synchronized).

8. Claims 72, 76-78, and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knutson et al (6,788,710 B1) in view of Fimoff (6,958,781 B2).

Regarding claim 72, Knutson et al does not particularly disclose expanded supplemental data segment having 184 bytes comprising a total of 92 bytes of original supplemental data and a total of 92 bytes of null data.

However, Fimoff teaches digital communication system comprising a supplemental data segment having a total of 92 bytes of original supplemental data (Fig. 12, RSVB data) in order to transmit robust VSB data (col. 1, lines 53-60).

Furthermore, Knutson teaches a null packet data segment (Null PKT) having a same length/size as the supplemental packet data segment (Aux. PKT) (Fig. 3).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a DTV receiver that processes VSB data as taught by Knutson et al to incorporate/combine Fimoff's teaching as above so that the expanded supplemental data segment have 184 bytes comprising a total of 92 bytes of original supplemental data and a total of 92 bytes of null data in order to transmit robust VSB data.

Regarding claim 76, Knutson et al does not particularly disclose expanded supplemental data segment having 187 bytes comprising a total of 3 bytes of an MPEG header, a total of 92 bytes of original supplemental data, and a total of 92 bytes of null data.

However, Fimoff teaches digital communication system comprising a supplemental data segment having a total of 92 bytes of original supplemental data (Fig. 12, RSVB data) in order to transmit robust VSB data (col. 1, lines 53-60).

Furthermore, Knutson teaches MPEG header (MPEG-2 standard comprises 3 header bytes plus 1 sync byte) being added to each main data segment (col. 4, lines 13-15; note: MPEG-2 standard packetized datastream comprises PES header) and each expanded supplemental data segment (Fig. 3A, PES Header; col. 2, lines 16-19; col. 4, lines 34-45), and a null packet data segment (Null PKT) having a same length/size as the supplemental packet data segment (Aux. PKT) (Fig. 3).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a DTV receiver that processes VSB data as taught by Knutson et al to incorporate/combine Fimoff's teaching as above so that the expanded supplemental data segment have 187 bytes (MPEG-2 standard excluding 1 sync byte) comprising a total of 3 bytes of an MPEG header, a total of 92 bytes of original

supplemental data, and a total of 92 bytes of null data in order to transmit robust VSB data.

Regarding claims 77-78, Knutson et al does not particularly disclose expanded supplemental data segment having 187 bytes comprising a total of 3 bytes of an MPEG header, a total of 72 and/or 82 bytes of original supplemental data, a total of 20 and/or 10 bytes of Reed-Solomon parity, and a total of 92 bytes of null data, respectively.

However, Fimoff teaches digital communication system comprising a supplemental data segment having a total of 72 bytes of original supplemental data and a total of 20 bytes of Reed-Solomon parity (Fig. 12, RSVB data) in order to transmit robust VSB data (col. 1, lines 53-60).

Furthermore, Knutson teaches MPEG header (MPEG-2 standard comprises 3 header bytes plus 1 sync byte) being added to each main data segment (col. 4, lines 13-15; note: MPEG-2 standard packetized datastream comprises PES header) and each expanded supplemental data segment (Fig. 3A, PES Header; col. 2, lines 16-19; col. 4, lines 34-45), and a null packet data segment (Null PKT) having a same length/size as the supplemental packet data segment (Aux. PKT) (Fig. 3).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a DTV receiver that processes VSB data as taught by Knutson et al to incorporate/combine Fimoff's teaching as above so that the expanded supplemental data segment have 187 bytes (MPEG-2 standard excluding 1 sync byte) comprising a total of 3 bytes of an MPEG header, a total of 72 and/or 82 bytes of original supplemental data, a total of 20 and/or 10 bytes of Reed-Solomon parity, and a total of 92 bytes of null data ($72 + 20$ bytes), respectively, in order to transmit robust VSB data.

Regarding claim 89, Knutson et al does not particularly disclose an amount of added Reed-Solomon parity data (bytes) varies with an amount of supplemental data.

However, Fimoff teaches digital communication system comprising an amount of added Reed-Solomon parity data (bytes) varying with an amount of supplemental data (Fig. 12, when RSVB data = 72 bytes, then parity data = 40 bytes; when RSVB data =

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92 bytes, then parity data = 20 bytes) in order to transmit robust VSB data (col. 1, lines 53-60).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a DTV receiver that processes VSB data as taught by Knutson et al to incorporate Fimoff's teaching as above so that the amount of added Reed-Solomon parity data (bytes) varies with the amount of supplemental data in order to transmit robust VSB data.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

A. Ramaswamy et al (6,888,840 B1), Output symbol rate control in a packet transport rate conversion system.

10. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to *Shawn An* whose telephone number is (571) 272-7324.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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12. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/SHAWN AN/

Primary Examiner, Art Unit 2621

5/02/08